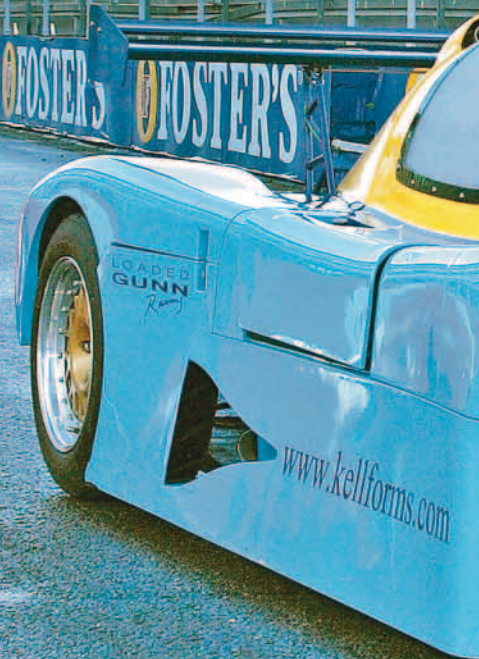


Devil in the Detail

Kellforms Retoga



Trackday kitcars are all the rage these days. It takes something extraordinary to make one a bit special. Meet the Kellforms Retoga...



Pics: Tony Sissons

If several years ago you had asked Kellforms Woodmasters whether they'd be making their own car one day, they probably would have wondered what you were talking about. Alan Goater founded the company 43 years ago, and now runs it with his son Kevin.

They specialise in prototyping and rather refreshingly have evolved the way they work over the years grasping modern technology as it arrives rather than fighting against it.

The name comes from keller machines, which cut and copy a billet metal shape and at the same time hammer forms or shapes. Among their many automotive manufacturing clients are Aston Martin, who used to make their bodies by hand, using hammer formers. Kellforms made the formers. The Woodmasters part of the name came about because they used to work extensively with timber. These days, though they still have old school craftsmen among their 27 employees, but they really focus on CAD-computer aided design.



Doors open wide allowing easy access.

Mainstream manufacturers regularly contact Kellforms to make inspection jigs and fixtures. Actually, the heater switches in your Mondeo are made in their millions, and prior to production Ford need to make sure they function correctly and fit within the intended environment. Hence the services of Kellforms are required.

Every tactile piece of switchgear and interior 'furniture' has such a jig and so

as you'd imagine Kellforms are kept pretty busy by the likes of Nissan UK and many other mainstream makers.

In addition the company also work heavily with injection-moulded plastics and mould making. For example they could make any kitcar manufacturer the best set of master moulds ever, and although you'd expect to pay around £40,000 for them they would have an



Kellforms' Kevin Goater.



Front and rear sections easily removed.



Inbound dampers with unequal wishbones.

**White 'Cobra'
pinstripe works well.**



almost infinite life and would never require plasticine to fill the holes or cracks that traditionally appear after a couple of hundred 'pulls'.

This brings us neatly to their newly launched Retoga. Alan Goater tells me that it was almost destiny that has seen them become manufacturers in their own right. For years they worked anonymously behind the scenes on hundreds of various cars and it was about time that they took some of the credit for themselves.

The Retoga (name comes from an anagram of Goater) actually came about by chance. It's no secret that the body shares very similar lines to the Lynx AE LR1, and the ins and outs, whys and wherefores of that situation don't belong here, but suffice to say, the company exhibited what was initially called a

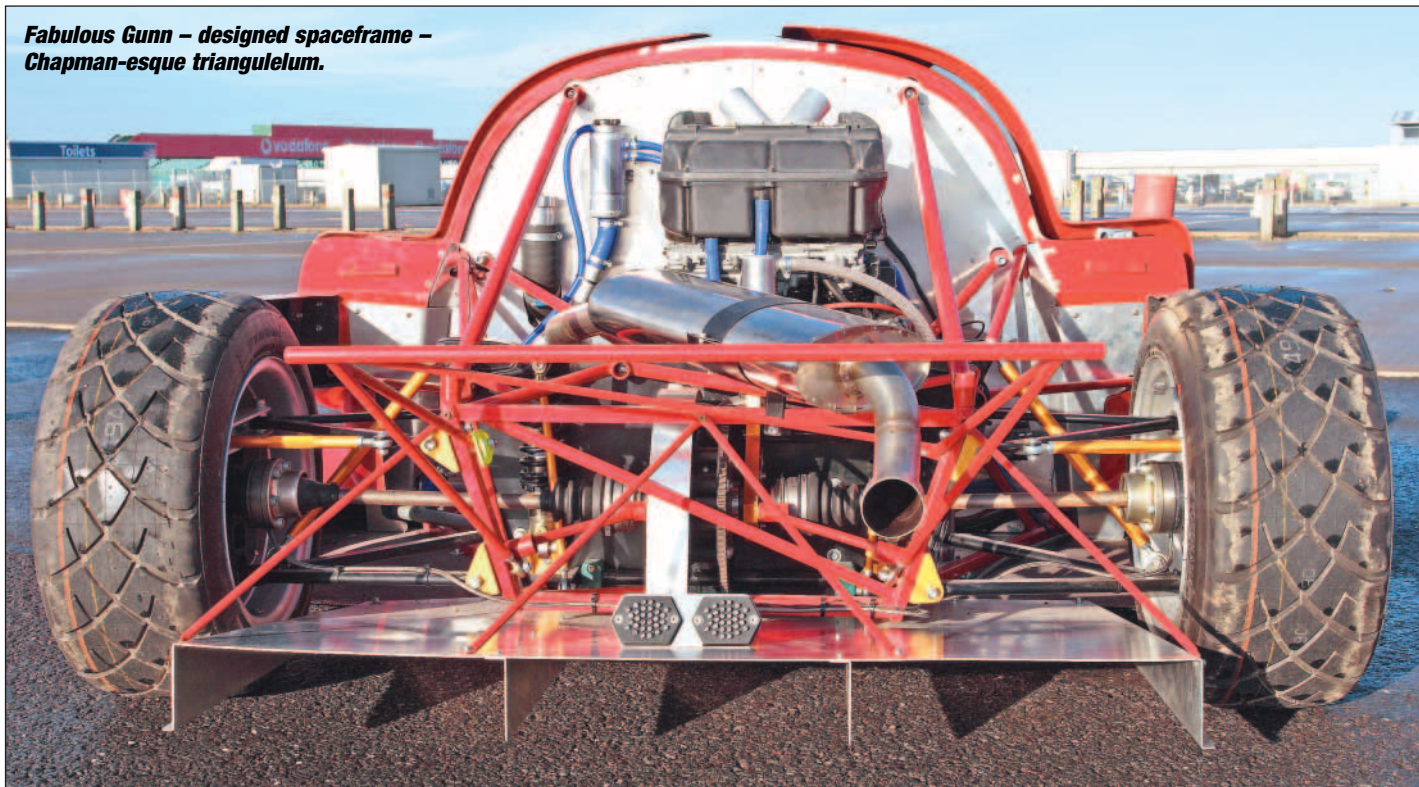
'Universal' body at Exeter in November 2004. At that time it didn't have a chassis and to be honest Kellforms were in two minds whether to sell it as an ongoing project to another manufacturer.

However, such was the public response they did the latter and decided to engineer a chassis and come up with running gear. Their decision was further aided by contact at the show with leading racecar preparation man and well-known Sports 2000 engineer Gary Gunn.

Within a short space of time Gary's Loaded Gunn Racing were commissioned to do the honours. This would seem like a big task to many but not Gary, like most designers/engineers he prefers to start with a clean sheet of paper, and although he was restricted by the parameters of the existing shell, he very quickly came up with a fantastic spaceframe structure.

This delicate-looking chassis, with small diameter cross-tubing and Chapman-esque triangulation, has a massive amount of rigidity, and it's almost a shame to put a body over it, even one as lithe as the Retoga's. There's a trademark Gunn simplicity about the structure. The chassis weighs just 50kg with oval tube wishbones, the bottom ones being extremely long. Uprights and wishbones are basically the same all-round as are the discs, bells and calipers, with push-rod operation front and rear, and inner arches at the front for functionality that also add rigidity to the whole ensemble. The spaceframe is made from a combination of 16 and 18 gauge CDS with box section on floors and a 2mm roll cage. At the rear there are 'spiders' coming off the chassis, which give a flexible choice of engines as mentioned.

**Fabulous Gunn – designed spaceframe –
Chapman-esque triangulum.**





Just check that interior out.

Drive comes via a Regina 5/30 chain, driven by a Quaife diff, with Gunn's own bearing mounts and a cunning Suzuki Alto-sourced starter motor ring gear, which gives an electric reverse. Getting a chain lined-up is difficult, but Gary has mounted this installation carefully and well. Drive ratio is 3.5:1 giving estimated top speed of around 130mph.

The prototype and new red demo, (which isn't quite a production-ready car), are powered by bike engines – Yamaha R1 in this instance, and the rear subframe has been cleverly designed to enable any in-line four bike engine to be accommodated.

Gary does tell me though that they are working on a conventional 'car' engine option – the tiny 1.6 litre Zetec SE unit, which weighs just 80kg, a small penalty over the R1 – which is happy to rev to 8500rpm. In standard guise it 'only' produces 128bhp, but a set of hot cams and £500 can easily take this to 170bhp while a bit of internal work can see this

rise to 200bhp. Potentially this is an exciting move and expect to see more on this one soon.

Back to the present and I think it's remarkable what Gary Gunn and Kellforms have come up with in such a short space of time, there's real quality and ingenuity on show here – take for example the way Gunn has unashamedly utilised same size unequal length double wishbones at front and rear. Thinking behind this is that if there's an odd, ahem, mishap at a trackday or during a race meeting, it's relatively easy to procure a spare.

Mentioning the track, the Retoga is not intended as a roadgoing car (yet) but that could change in the future. It's pretty obvious that its reason for being is largely trackday-related and as I found out at an icy Silverstone it makes a formidable case for itself.

The day of our test saw everyone skating across the paddock like Torvill & Dean and it was so bad that track activity was delayed for two hours.



Beautiful engineering courtesy of Gary Gunn.

We were kindly allowed by leading trackday organiser Gold Track to attend their day on the Silverstone GP circuit, and I have to say there was a wonderfully eclectic mix of machinery from Ferrari 575 Maranello to Peugeot 205 and the Retoga looks the part as it joins the belated rush to get on track. Behind the wheel I'm feeling extremely cautious. It's a new car, and the creators are watching intently from the pitwall. Track conditions are atrocious and we're all tottering around like cartoon dogs looking for even the merest hint of grip.

Despite the cold though I am feeling pretty comfortable and snug in the cockpit and I love the finishing touches such as the simple dash layout, (this car has an ETB Digidash 2), however, Kellforms are reverting to analogue gauges, as the feeling is the digital items almost distract the driver such is the amount of info produced. Other neat areas concern the superb plastic seat carcass, which is pleasing on the eye and allows stylish installation of the driver's chosen seat. It means that I'm not sitting looking at bare aluminium floors, while it also breaks up a possibly drab area.

Any real attempt at performance exploration is almost impossible today with just staying on the grey stuff an

Loaded Gunn Racing *pulling the trigger*

Gary Gunn has always loved cars, particularly racing cars and in recent years has created various incarnations of his own Sports 2000 racer. He ran Gunn Racing for six years, dealing mainly with race preparation and maintenance, until with businessman and racer Jonathon Loader he formed Loaded Gunn Racing in 2001 (incidentally the D part of Loaded stands for Loader's wife Deborah). In addition to preparation Gunn now deals with restoration, prototyping, manufacture and creating street rods and custom cars from scratch "very similar principles to designing a race car actually" says Gary.

There's also a lot of synergy between Gunn and Kellforms. In a nutshell and in his own words "we take fag packet drawings and turn them into cars" – bloody successful ones if you look at the list of race victories and championship wins to his name, with perhaps his biggest claim to fame so far is designing the ADR Sports 1000.

Loaded Gunn Racing
Braydon, Swindon,
Wiltshire SN5 0AN
Tel: 01793 854 350
www.sports2000.co.uk



achievement. What's clear though is the amazing amount of potential on tap. Steering is a real eye-opener, via the bespoke steering rack, giving a lovely feel through the wheel.

Talking of bespoke parts. There's no donor malarkey here, with off the shelf stuff from AP Racing taking care of the brakes and Gaz looking after the dampers (Springs are 100lb on the front with 150s at the rear). Actually, the Retoga could almost be described as over-braked, a deliberate ploy on Gunn's part as it allows for possible brake fade during a long trackday. Any items not brought-in are produced in-house by Kellforms. This must mark a record as the kitcar with the highest percentage of bespoke self-made components. For example Gary Gunn gave Kellforms some dimensions for the uprights. Within three days there was a three dimensional plastic model, and another seven saw the finished article. Actually, parts

manufacture is another area where Kellforms have something to offer other kitcar manufacturers.

If you compare Retoga with one of Gary Gunn's own racer's you'll find many similarities with the Retoga which is very logical if you think about it.

Helping the sweet steering feel are 13in rims (7in front, 8in rear) shod with Yokohama AO32R rubber and even in these trying conditions ride is surprisingly soft and compliant for a track-orientated car and it makes for a supple feel through the chassis, and more importantly my back, and it's impressive.

On a couple of occasions along Hangar Straight I give the accelerator a questioning prod and revel in the R1's speed but although I'm a little frustrated I just know this is a superb performance car which makes me wish for a warm summer's day.

If the reaction of the other trackday participants is anything to go by then the

Kellforms/Loaded Gunn collaboration is destined for success, and the price of this engineering prowess is not as expensive as you may think. The basic 'starter' chassis package is available at £4413 inc VAT although the favoured and most cost effective form of supply is the comprehensive option at £14,094 inc VAT, which has a lot of the work required done for you and seems very good value for money. Factory built Retogas are available from £33,053

I came away from this test feeling hugely impressed by the Retoga with a tip of the hat to Kellforms for having the belief and also to Gary Gunn for his engineering prowess. Methinks you may just hear a lot more about this one soon. For more information contact:

Kellforms Woodmasters;
Derehams Lane, Loudwater,
Buckinghamshire HP10 9RH
 Tel: 01494 472 233
 Website: www.kellforms.com



First production Retoga (right) with prototype.